

*If you are using a printed copy of this procedure, and not the on-screen version, then you **MUST** make sure the dates at the bottom of the printed copy and the on-screen version match.*

*The on-screen version of the Collider-Accelerator Department Procedure is the Official Version.*

*Hard copies of all signed, official, C-A Operating Procedures are kept on file in the C-A ESHQ Training Office, Bldg. 911A.*

## C-A OPERATIONS PROCEDURES MANUAL

### ATTACHMENT

#### 8.15.3.d Instructions for Chipmunk Installation Request Form (BNL F 2948A)

C-A OPM Procedures in which this Attachment is used.

8.15.3		

#### Hand Processed Changes

<u>HPC No.</u>	<u>Date</u>	<u>Page Nos.</u>	<u>Initials</u>
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Approved: \_\_\_\_\_  
Collider-Accelerator Department Chairman

\_\_\_\_\_  
Date

V. Castillo

### 8.15.3.d Instructions for Chipmunk Installation Request Form (BNL F 2948A)

#### 1. **Purpose**

This document facilitates the completion of BNL Form F 2948A, Chipmunk Installation Request.

#### 2. **Responsibilities**

The personnel or group involved in filling each section is as follows: (LP) = Liaison Physicist, (ACG) = Access Controls Group, (RCD) = Radiological Controls Group, (MC) = Main Control Group and (CG) = Controls Group.

#### 3. **Prerequisites**

None

#### 4. **Precautions**

None

#### 5. **Procedure**

##### 5.1 Completion of Upper Portion of White Form

##### 5.1.1 Installation Request No. (ACG)

- Request numbers are generated by the ACG representative for new Chipmunk installations only. These numbers increase sequentially.
- Replacement requests with different installation parameter(s), 5.1.6.1 thru 5.1.6.6, from the original Request get a letter appended to the original Request number.

##### 5.1.2 Required Date of Installation (LP)

- This is the date by which the Chipmunk installation must be completed and operating.
- “Operating” requires testing to the Main Control Room (MCR) if the Chipmunk is linked to the computer.

##### 5.1.3 Location (LP)

- The Facility: AGS, Booster, Linac, Beam Line No., Experimental Trailer, RHIC, ATR, Tandem, etc.

- Brief description of the area including local objects of identification.
- Map co-ordinates of the area.

#### 5.1.4 Exp. No. (LP)

- The Experiment No.(s) involved with this installation.

#### 5.1.5 Contact (LP)

- Liaison Physicist requesting the installation.
- The Chairman of the Radiation Safety Committee can perform the functions of a Liaison Physicist.

#### 5.1.6 Special Instructions

##### 5.1.6.1 Replacement Device

- A Chipmunk replacing another, after annual shutdown and calibration, at the same location.

##### 5.1.6.2 Local Area Monitor

- A Chipmunk used for audio / visual warning of radiation levels to personnel.

##### 5.1.6.3 Marked Placement

- This Chipmunk has a marked location where it must be spotted. This location is determined by Fault Studies. Initially a Chipmunk designated for marked placement may not have a marked location.

##### 5.1.6.4 Security System Device

- A Chipmunk that interlocks an Accelerator Facility to turn off the beam at a set level of radiation.

##### 5.1.6.5 Security System Trip Level

- The level in mrem/hr at which an interlocking Chipmunk (5.1.6.4) will effect a trip.
- There are three trip levels: 50, 20 and 2.5 mrem/hr set by a 3-position switch in the interlocking hardware.

- The Quality Factor (QF) of the source of radiation and the QF setting of the Chipmunk also determine the trip level as detailed in the QF Matrix, Attachment 1.

#### 5.1.6.6 Alarm Levels

- The radiation level in mrem/hr at which the computer alarms the Main Control Room (MCR) when the Chipmunk registers that level.
- There are Chipmunks that are not linked to the computer.
- There are Chipmunks linked to the computer that do not have an alarm level.
- Alarm levels for Protons and Heavy Ions may differ.

#### 5.1.6.7 Notify Contact Immediately upon Completion (LP)

- The LP may request to be informed of the completion of the Chipmunk installation.

#### 5.1.7 Other Instructions (LP)

- The LP may list instructions pertaining to the Chipmunk installation that are not included under Special Instructions.

#### 5.1.8 Requested By (LP)

- This is signed by the LP and initialed by the Chairman of the Radiation Safety Committee.

#### 5.1.9 Date (LP)

- This is the date the Chipmunk Installation Request form BNL F 2948A was submitted.

#### 5.1.10 Unit No. (ACG)

- This is a sequential number assigned to a Chipmunk when it is first calibrated after manufacture.

#### 5.1.11 NMO # (CG)

- The NMO (Nuclear Monitor) number is the computer address that receives counts from the Chipmunk.

- The CG generates the computer addresses which become NMO numbers.
- The ACG assigns an NMO number to a Chipmunk location when a Chipmunk Installation Request is executed.
- The ACG assigns the NMO number to the Chipmunk while it is installed at a Chipmunk location.
- NMO numbers are not sequential. Missed numbers are spares.

#### 5.1.12 Date (ACG)

- This is the date the ACG receives the form BNL F 2948A from the LP.

#### 5.1.13 Location (RCD)

- This is the RCD description of the location of the Chipmunk.
- The RCD description is used in the RCD's Detector File List Program.

### 5.2 Completion of Lower Portion of White Form

#### 5.2.1 Justification Remarks (LP)

- The LP states reason(s) for installation of Chipmunk.
- The LP records areas exclusive of Location (5.1.3) monitored by this Chipmunk.

#### 5.2.2 Sign-Off

##### 5.2.2.1 Access Controls Group (ACG)

- The ACG representative initials this box on completion of the Chipmunk installation.

##### 5.2.2.2 Operations Coordinator (MC)

- The Operations Coordinator for the shift, or his representative, initials this box on completion of the Chipmunk installation.

##### 5.2.2.3 Radiological Control Technician (RCT)

- The RCT initials this box on completion of the Chipmunk installation.

#### 5.2.3 Installation Complete (ACG)

- The ACG representative signs here on completion of the Chipmunk installation.

#### 5.2.4 Date

- The ACG representative records the date of completion of Chipmunk installation.

### 5.3 White Form Disposal

- The white copy of form BNL F2948A is saved with the Radiation Safety Committee records of Chipmunk Installation Requests.

### 5.4 Completion of Lower Portion of Yellow Form (ACG)

#### 5.4.1 Dcon / Sis / Plc / Address

- The ACG records the type of data-communication system: DataCon, VME or PLC.
- The ACG records the computer address of the Chipmunk.
- The ACG initials on completion of the items listed in section 5.4.1.

#### 5.4.2 Change of Placement Only

- The ACG verifies if the installation was only the change of spotting of the Chipmunk at the same location.

#### 5.4.3 Placement

- The ACG verifies if the Chipmunk was spotted at the location.

#### 5.4.4 Marked

- The ACG verifies if the spot for the Chipmunk is marked.

#### 5.4.5 Cables Attached

- The ACG verifies all cabling for the Chipmunk installation is completed.

#### 5.4.6 Power Up

- The ACG verifies the Chipmunk installation is powered.

#### 5.4.7 Interlock Check

- The ACG verifies that the Interlocking function of the Chipmunk installation is operational.
- The Interlock is enforced with the Radioactive test source if the trip level is 2.5 mrem/hr or 20 mrem/hr.
- The Interlock is enforced with the Test button on the Chipmunk if the trip level is 50 mrem/hr.

#### 5.4.8 Reset Check

- The ACG verifies the Resetting functions of the Chipmunk installation are operational.
- The local Reset function at the Chipmunk interface box must be verified.
- The remote Reset function at the MCR must be verified.
- RHIC chipmunks have only a Remote reset function, at the MCR.

#### 5.4.9 PC Message Logging Check

- The ACG verifies the Logging function of the Chipmunk installation, at the MCR, is operational.

#### 5.4.10 Warning Tag #

- The ACG installs a Security Warning Tag on the cable to the Chipmunk, at the Chipmunk installation.
- The ACG documents the Warning Tag #.

#### 5.4.11 Sign-Off

##### 5.4.11.1 Operations Coordinator

- The Operations Coordinator for the shift, or his representative, initials this box on completion of the Chipmunk installation.

##### 5.4.11.2 Radiological Control Technician

- The RCT initials this box on completion of the Chipmunk installation.

#### 5.4.12 Installation Complete (ACG)

- The ACG representative signs here on completion of the Chipmunk installation.

#### 5.4.13 Date

- The ACG representative records the date of completion of Chipmunk installation.

#### 5.4.14 Form Disposal

- The yellow copy of form BNL F2948A is saved with the ACG's records of Chipmunk Installation Requests.

### 5.5 Completion of Lower Portion of Green Sheet (MC)

#### 5.5.1 Circle as Applicable (MC)

- The Operations Coordinator or representative circles the options and activities selected in 5.5.2 thru 5.5.5.

#### 5.5.2 Assign / Verify Dcon / Sis / Plc Address

- The MC records the type of data-communication system: DataCon, VME or PLC.
- The MC records the computer address of the Chipmunk.
- The MC initials form after required data is recorded.

#### 5.5.3 Verify Dcon / Sis / Plc Address and Description / Location with HP Detector File List

- The MC verifies the Chipmunk computer address correlates with the Chipmunk location in the RCD Detector File list (5.1.13). Initial form when addresses verified.

#### 5.5.4 Enter / Verify Database NMO Number and Description

- The MC verifies the Database NMO Number and Description, entering them if necessary. Initial form when completed.

#### 5.5.5 Enter / Verify Spreadsheet Neutron Monitor Name

- The MC verifies the Spreadsheet NMO name entering it if necessary. Initial form when complete.

#### 5.5.6 Installation Complete (MC)

- The Operations Coordinator or representative signs here on completion of the Chipmunk installation.

#### 5.5.7 Date

- The MC representative records the date of completion of Chipmunk installation.
- The MC representative retains Green copy for MC's Chipmunk installation records.

#### 5.5.8 Form Disposal

- The green copy of form BNL F2948A is saved with the MC's records of Chipmunk Installation Requests.

### 5.6 Completion of Lower Portion of Orange Sheet (RCD)

#### 5.6.1 Source Check

- The RCT verifies the Chipmunk installation is functional with a Radioactive test source. Initial form when completed.

#### 5.6.2 Alarm Level Set

- The RCT verifies the Alarm level for the Chipmunk installation is set in the computer at MCR. Initial form when completed.

#### 5.6.3 Update Map

- The RCT verifies the RCD Chipmunk Installation map is updated. Initial form when completed.

#### 5.6.4 Update MCR Map

- The RCT verifies that the MCR Chipmunk Installation map is updated. Initial form when completed.

#### 5.6.5 Installation Complete (RCD)

- The RCT signs here on completion of the Chipmunk installation.

#### 5.6.6 Date

- The RCT records the date of completion of Chipmunk installation.
- The RCT retains Pink copy for RCD's Chipmunk installation records.

#### 5.6.7 Form Disposal

- The pink copy of form BNL F2948A is saved with the RCD's records of Chipmunk Installation Requests.

### 6. **Documentation**

None

### 7. **References**

None

### 8. **Attachments**

- 8.1 Attachment 1 – Matrices for Correlating Radiation Source and Chipmunk Quality Factor
- 8.2 Attachment 2 – Chipmunk Installation Form

**MATRICES FOR CORRELATING RADIATION  
SOURCE AND CHIPMUNK QUALITY FACTOR**

**S  
O  
U  
R  
C  
E**

**MUONS,  
GAMMAS  
(QF 1)**

**GAMMAS +  
NEUTRONS  
(QF 2.5)**

**LOW NRG  
NEUTRONS  
(QF 5)**

CHIPMUNK QUALITY FACTOR SETTING		
QF 1	QF 2.5	QF 5
400	1000	2000
*2.5 urem	*1 urem	*0.5 urem
160	400	800
*6 urem	*2.5 urem	*1.3 urem
800	200	400
*12 urem	*5 urem	*2.5 urem

**MATRIX - 1**

Counts Per mrem

**\*urem/count**

This is the constant [VI (5)]  
in the Detector File  
List Program. There it is  
expressed in mrem/count,  
where:

**2.5 urem = 0.0025 mrem**

**S  
O  
U  
R  
C  
E**

**MUONS,  
GAMMAS  
(QF 1)**

**GAMMAS +  
NEUTRONS  
(QF 2.5)**

**LOW NRG  
NEUTRONS  
(QF 5)**

CHIPMUNK QUALITY FACTOR SETTING		
QF 1	QF 2.5	QF 5
X 1	X 0.4	X 0.2
X 2.5	X 1	X 0.5
X 5 *12 urem	X 2 *5 urem	X 1 *2.5 urem

**MATRIX - 2**

Meter Reading  
Multiplier for Radiation  
In mrem hr

**WHERE:**  
**Chipmunk Meter Reading x**  
**Matrix-2 Multiplier = mrem/hr**

Attachment 1

### CHIPMUNK INSTALLATION REQUEST

INSTALLATION REQUEST NO. \_\_\_\_\_ REQUIRED DATE OF INSTALLATION: \_\_\_\_\_

LOCATION: \_\_\_\_\_

EXP. NO. \_\_\_\_\_

CONTACT: \_\_\_\_\_

#### SPECIAL INSTRUCTIONS:

REPLACEMENT DEVICE ☐ NO ☐ YES (SEE INSTALLATION REQUEST NO. \_\_\_\_\_)  
LOCAL AREA MONITOR ☐ NO ☐ YES  
MARKED PLACEMENT ☐ NO ☐ YES  
SECURITY SYSTEM DEVICE ☐ NO ☐ YES

SECURITY SYSTEM DEVICE TRIP LEVEL \_\_\_\_\_ mR/hr.

ALARM LEVELS  
PROTONS \_\_\_\_\_ mR/hr. HEAVY IONS \_\_\_\_\_ mR/hr.

NOTIFY CONTACT IMMEDIATELY UPON COMPLETION? ☐ YES ☐ NO

OTHER INSTRUCTIONS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

REQUESTED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

UNIT #: \_\_\_\_\_ NMO #: \_\_\_\_\_

DATE: \_\_\_\_\_ LOCATION: \_\_\_\_\_

(ACG) (RCO)

JUSTIFICATION REMARKS:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

SIGN-OFF

ACCESS  
CONTROLS  
GROUP: ☐

OPERATIONS  
COORDINATOR: ☐

RADIOLOGICAL  
CONTROL  
TECHNICIAN: ☐

INSTALLATION COMPLETE: \_\_\_\_\_ DATE: \_\_\_\_\_

BNL F 2246A

RADIATION SAFETY COMMITTEE

Attachment 2

**CHIPMUNK INSTALLATION REQUEST**

INSTALLATION REQUEST NO. \_\_\_\_\_ REQUIRED DATE OF INSTALLATION: \_\_\_\_\_

LOCATION: \_\_\_\_\_

EXP. NO. \_\_\_\_\_

CONTACT: \_\_\_\_\_

**This section completed when  
data entered on white sheet.**

**SPECIAL INSTRUCTIONS:**

REPLACEMENT DEVICE ☐ NO ☐ YES (SEE INSTALLATION REQUEST NO. \_\_\_\_\_)

LOCAL AREA MONITOR ☐ NO ☐ YES

MARKED PLACEMENT ☐ NO ☐ YES

SECURITY SYSTEM DEVICE ☐ NO ☐ YES

SECURITY SYSTEM DEVICE TRIP LEVEL \_\_\_\_\_ mR/hr

ALARM LEVELS \_\_\_\_\_

PROTONS \_\_\_\_\_ mR/hr HEAVY IONS \_\_\_\_\_ mR/hr

NOTIFY CONTACT IMMEDIATELY UPON COMPLETION? ☐ YES ☐ NO

**OTHER INSTRUCTIONS:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

REQUESTED BY \_\_\_\_\_ DATE: \_\_\_\_\_

UNIT # \_\_\_\_\_ NMO # \_\_\_\_\_

DATE: \_\_\_\_\_ LOCATION: \_\_\_\_\_

(ACQ) (ROD)

DCON/SIS/PLC ADDRESS \_\_\_\_\_ (INITIAL) \_\_\_\_\_

PP/SIS/PLC ADDRESS \_\_\_\_\_

CHANGE OF PLACEMENT ONLY: YES N/A

PLACEMENT: (INITIAL) \_\_\_\_\_ MARKED: YES NO

CABLES ATTACHED: (INITIAL) \_\_\_\_\_ POWER UP: (INITIAL) \_\_\_\_\_

INTERLOCK CHECK: (INITIAL) \_\_\_\_\_ RESET CHECK: (INITIAL) \_\_\_\_\_

PC MESSAGE (INITIAL) \_\_\_\_\_ WARNING TAG# \_\_\_\_\_

LOGGING CHECK: \_\_\_\_\_

SIGN-OFF

OPERATIONS COORDINATOR ☐ RADIOLOGICAL CONTROL TECHNICIAN ☐

INSTALLATION COMPLETE: \_\_\_\_\_ DATE: \_\_\_\_\_

DNL F 2340A

**ACCESS CONTROLS GROUP**

# CHIPMUNK INSTALLATION REQUEST

INSTALLATION REQUEST NO. \_\_\_\_\_ REQUIRED DATE OF INSTALLATION: \_\_\_\_\_  
LOCATION: \_\_\_\_\_  
EXP. NO. \_\_\_\_\_  
CONTACT: \_\_\_\_\_

This section completed when  
data entered on white sheet.

## SPECIAL INSTRUCTIONS:

REPLACEMENT DEVICE ☐ NO ☐ YES (SEE INSTALLATION REQUEST NO. \_\_\_\_\_)  
LOCAL AREA MONITOR ☐ NO ☐ YES  
MARKED PLACEMENT ☐ NO ☐ YES  
SECURITY SYSTEM DEVICE ☐ NO ☐ YES

SECURITY SYSTEM DEVICE TRIP LEVEL \_\_\_\_\_ mR/hr.

ALARM LEVELS  
PROTONS \_\_\_\_\_ mR/hr. HEAVY IONS \_\_\_\_\_ mR/hr.

NOTIFY CONTACT IMMEDIATELY UPON COMPLETION? ☐ YES ☐ NO

## OTHER INSTRUCTIONS:

REQUESTED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
UNIT # \_\_\_\_\_ NMO # \_\_\_\_\_  
DATE: \_\_\_\_\_ LOCATION: \_\_\_\_\_  
(RDS) (RCD)

CIRCLE AS APPLICABLE

ASSIGN/VERIFY DCON/SIS/PLC ADDRESS \_\_\_\_\_ (INITIAL) \_\_\_\_\_  
PP/SIS/S ADDRESS

VERIFY DCON/SIS/PLC ADDRESS AND DESCRIPTION/LOCATION \_\_\_\_\_ (INITIAL) \_\_\_\_\_  
WITH HP DETECTOR FILE LIST

ENTER/VERIFY DATABASE NMO NUMBER AND DESCRIPTION \_\_\_\_\_ (INITIAL) \_\_\_\_\_

ENTER/VERIFY SPREAD SHEET NEUTRON MONITOR NAME \_\_\_\_\_ (INITIAL) \_\_\_\_\_

INSTALLATION COMPLETE: \_\_\_\_\_ DATE: \_\_\_\_\_

GNL F 244A

OPERATIONS COORDINATOR

**CHIPMUNK INSTALLATION REQUEST**

INSTALLATION REQUEST NO. \_\_\_\_\_ REQUIRED DATE OF INSTALLATION \_\_\_\_\_

LOCATION \_\_\_\_\_

EXP. NO. \_\_\_\_\_

CONTACT \_\_\_\_\_

**This section completed when  
data entered on white sheet.**

**SPECIAL INSTRUCTIONS:**

REPLACEMENT DEVICE ☐ NO ☐ YES (SEE INSTALLATION REQUEST NO. \_\_\_\_\_)

LOCAL AREA MONITOR ☐ NO ☐ YES

MARKED PLACEMENT ☐ NO ☐ YES

SECURITY SYSTEM DEVICE ☐ NO ☐ YES

SECURITY SYSTEM DEVICE TRIP LEVEL \_\_\_\_\_ mR/hr

ALARM LEVELS

PROTONS \_\_\_\_\_ mR/hr HEAVY IONS \_\_\_\_\_ mR/hr

NOTIFY CONTACT IMMEDIATELY UPON COMPLETION? ☐ YES ☐ NO

**OTHER INSTRUCTIONS:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

REQUESTED BY \_\_\_\_\_ DATE \_\_\_\_\_

UNIT \_\_\_\_\_ NMO # \_\_\_\_\_

DATE \_\_\_\_\_ LOCATION \_\_\_\_\_

(ACG) (RCD)

SOURCE CHECK (INITIAL) \_\_\_\_\_

ALARM LEVEL SET (INITIAL) \_\_\_\_\_

UPDATE MAP (INITIAL) \_\_\_\_\_

UPDATE MCR MAP (INITIAL) \_\_\_\_\_

INSTALLATION COMPLETE: \_\_\_\_\_ DATE: \_\_\_\_\_

BNL F 2048A

RADIOLOGICAL CONTROL DIVISION